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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,982	09/17/2003	David Chong Sook Lim	112055-0040P1	4640
24267	7590	09/06/2006	EXAMINER	
CESARI AND MCKENNA, LLP 88 BLACK FALCON AVENUE BOSTON, MA 02210			ANDUJAR, LEONARDO	
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/664,982

Applicant(s)

LIM ET AL.

Examiner

Leonardo Andújar

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,5 and 8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,5 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Acknowledgment

1. The amendment filed on 06/20/2006 in response to the Office action mailed on 03/28/2006 has been entered. The present Office action is made with all the suggested amendments being fully considered. Accordingly, pending in this Office action are claims 1, 4, 5 and 8.

Election/Restrictions

2. Applicant's election without traverse of species 1 (fig. 3) in the reply filed on 03/24/2005 is acknowledged.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 4, 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shim et al. (US 6,531,784) in view of Kang et al. (US 2003/017810 A1).

5. Regarding claim 1 Shim (e.g. fig. 9) shows a die containing package comprising: a die 14 defining electrical die contacts, a substrate defining first substrate contacts, flattened electrical conductive balls 58 attached to the die contacts and making electrical connections thereto, electrical conductive runs 22/24 on the substrate 12 connecting the first substrate contacts (i.e. the electrical contacts formed by the runs

Art Unit: 2826

and the wires 28) to second substrate contacts 18 wherein the second substrate contacts are located on the substrate opposite the first substrate contacts, electrically conductive wires 28 with a first ends making electrical connection to the first substrate contacts, and wherein the other ends are arranged making electrical connections to the flattened electrical conductive balls attached to the die contacts..

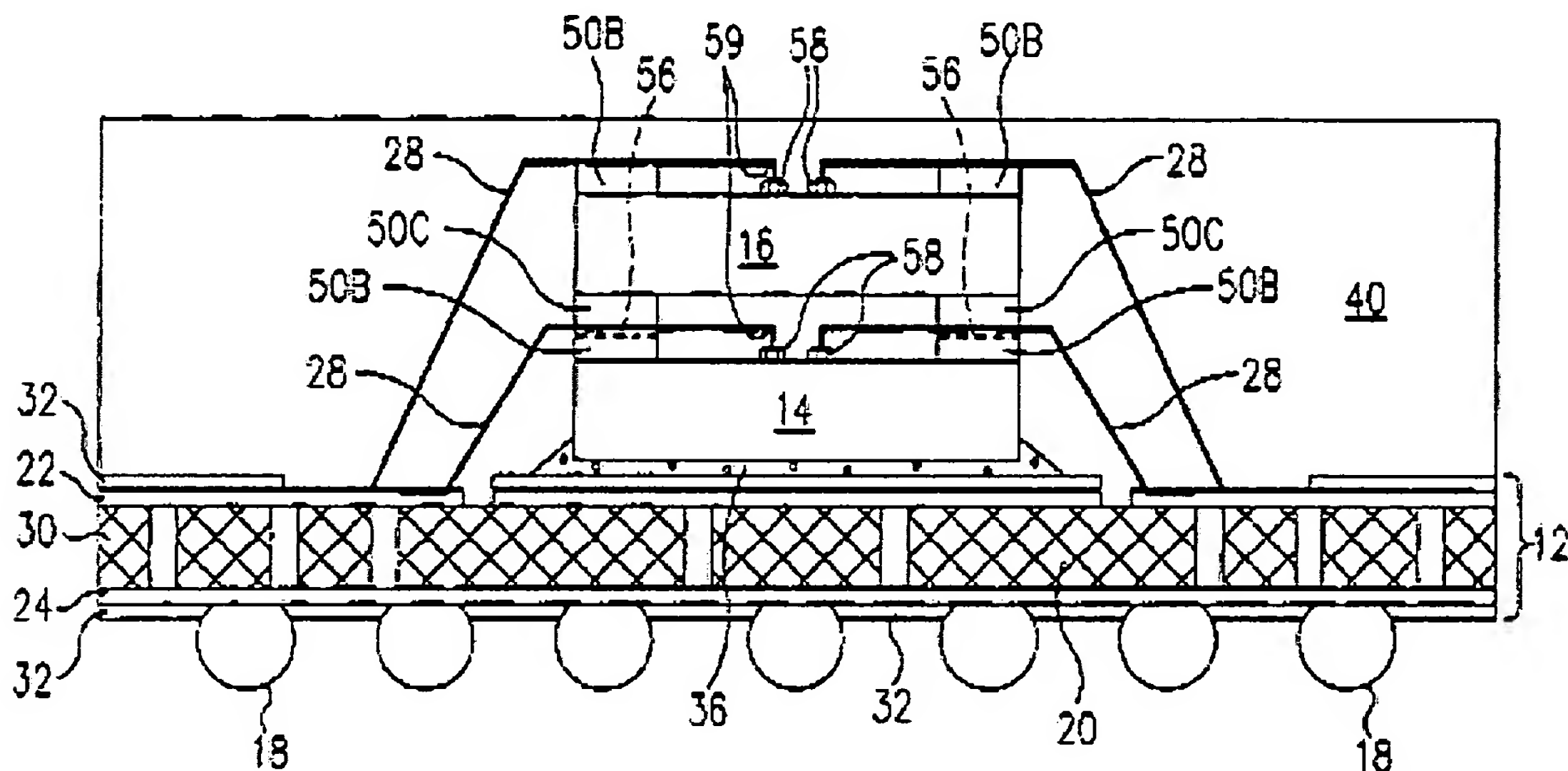
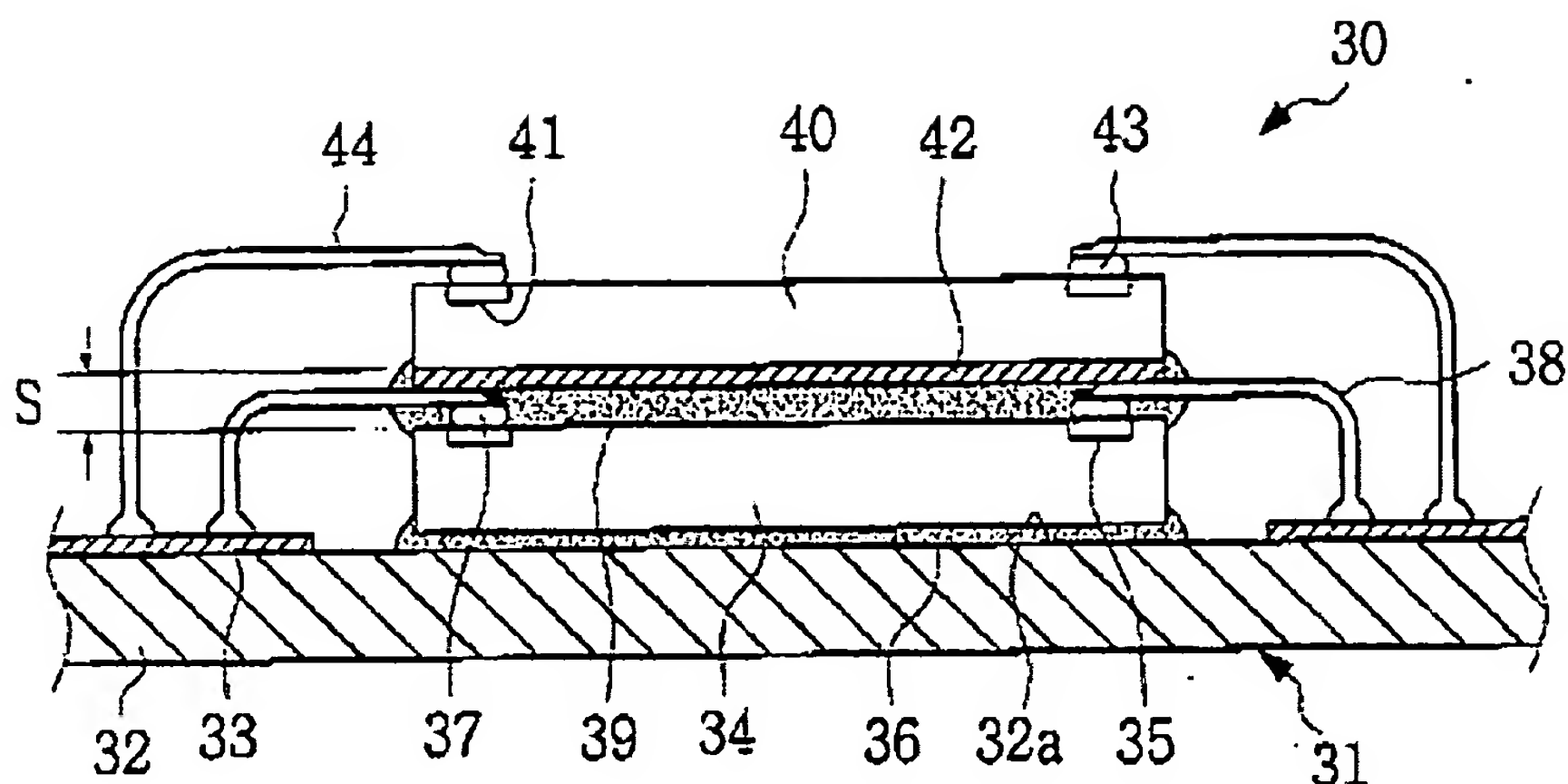


FIG. 9

Shim does not teach that other ends are horizontally attached to the flattened ball. Nevertheless, Kang (e.g. fig. 3) shows electrically conductive wires 38 that run substantially parallel to the surface of the die and have ends that are horizontally attached to flattened balls 37. According to Kang, this type of connection minimizes a space between the first chip and a second chip, thereby reducing the total height of the semiconductor stack (abstract).



It would have been obvious to one of ordinary skill in the art at the time the invention was made to horizontally attach the other ends of the wires disclosed by Shim to the fattened balls in accordance to Kang's invention to minimize the space between the first and the second chip, thereby reducing the total height of the semiconductor stack.

6. Regarding claim 4, Shim shows that the second substrate contacts are located to accommodate a pin out different from the die.

7. Regarding claim 5, Shim (e.g. fig. 9) shows process for packaging a die comprising the steps of: defining electrical die contacts, defining a substrate 12 with first substrate contacts, flattening an electrical conductive balls 58, attaching the flattened electrically conductive balls to the die contacts, forming electrical conductive runs 22/24 on the substrate 12 connecting the first substrate contacts (i.e. the electrical contacts formed by the runs and the wires 28) to second substrate contacts 18 wherein the second substrate contacts are located on the substrate opposite the first substrate contacts, connecting electrically conductive wires 28 to the first substrate contacts,

Art Unit: 2826

running the electrically conductive wires substantially parallel to the surface of the die contacts and attaching the other ends of the wires to the flattened electrically conductive balls thereby making electrical connections therebetween and wherein the other ends remain substantially parallel to the surface of the die. Shim does not teach that other ends are horizontally attached to the flattened ball. Nevertheless, Kang (e.g. fig. 3) shows electrically conductive wires 38 that run substantially parallel to the surface of the die and have ends that are horizontally attached to flattened balls 37. According to Kang, this type of connection minimizes a space between the first chip and a second chip, thereby reducing the total height of the semiconductor stack (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to horizontally attach the other ends of the wires disclosed by Shim to the flattened balls in accordance to Kang's invention to minimize the space between the first and the second chip, thereby reducing the total height of the semiconductor stack.

8. Regarding claim 8, Shim shows that the second substrate contacts are located to accommodate a pin out 18 different from the die.

Response to Arguments

9. Applicant's arguments filed 06/20/2006 have been fully considered but they are not persuasive.

10. Applicant argues that the prior art does not show that the second contacts are located on the substrate opposite the first substrate contact. Nevertheless, Shim clearly shows this limitation because the first contacts are located on the top surface whereas the second contacts are located on the opposite second surface or bottom surface.

Also, Shim shows that the runs 22/24 are formed on opposite sides of the substrate. As shown in figure 9, the second substrate contacts are located to accommodate a pin out 18 different from the die. Note that this pin is different and structurally independent from the die.

11. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., etched runs) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

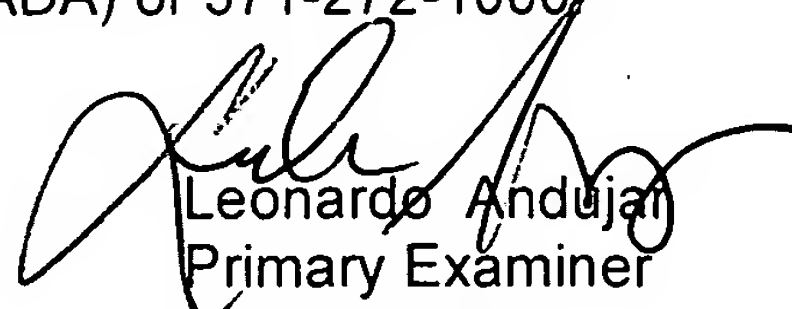
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonardo Andújar whose telephone number is 571-272-

Art Unit: 2826

1912. The examiner can normally be reached on Mon through Thu from 9:00 AM to 7:30 PM EST.

14. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Leonardo Andujar
Primary Examiner
Art Unit 2826

08/31/2006